LB304A
LBPS301A
LBPS304A

Hardened Ethernet Extender Quick Start Guide

Provides one channel for Ethernet over existing voice-grade twisted-pair copper wire.

Customer Support Information

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Quick Start Guide

This quick start guide describes how to install and use the Hardened Ethernet Extender. This is the Hardened Ethernet Extender of choice for harsh environments with space constraints.

QS1. Physical Description

The Port Status LEDs and Power Inputs

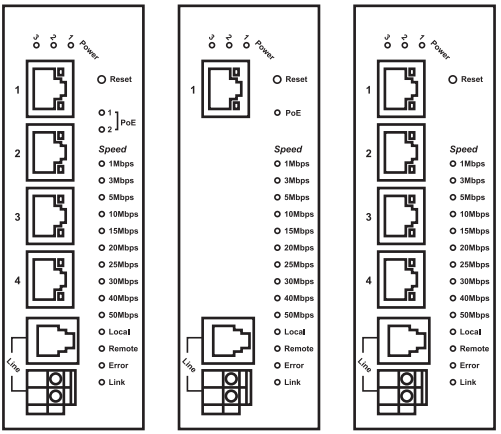

Figure QS-1. LB304A, LBPS301A, LBPS304A.

Table QS-1. Power input assignment.

Power	Signal	Voltage	Connector
Power 1		48 VDC	DC jack
Power 2	+	24–48 VDC	Terminal block
	-	Power Ground	
Power 3	+	24–48 VDC	
	-	Power Ground	
		Earth Ground	

Table QS-2. DIP switch assignment.

DIP Switch	Description
Loc	The device operates in local mode.
Rmt	The device operates in remote mode.

Table QS-3. LED indicators

Power LEDs	State	Indication
Power 1 Power 2 Power 3	Steady	Power on
	Off	Power off
Ethernet LEDs		
PoE	Steady	Powered device (PD) is connected
	Off	Powered device (PD) is disconnected.
Link/ACT (Green)	Steady	Valid network connection established.
	Flashing	Transmitting or receiving data. ACT stands for ACTIVITY.
	Off	Valid network connection not established, or not transmitting/receiving data.
Speed (Yellow)	Steady	Valid port connection at 100 Mbps.
	Off	Valid port connection at 10 Mbps.
Ethernet Extender LEDs		
Remote	Steady	The device operates in remote mode.
Local	Steady	The device operates in local mode.
Error	Steady	Error occurred.
Link	Steady	A valid connection established.

Table QS-4. Speed/distance.

Speed	Distance
1 Mbps	6232 ft. (1900 m)
3 Mbps	5904 ft. (1800 m)
5 Mbps	5249 ft. (1600 m)
10 Mbps	4593 ft. (1400 m)
15 Mbps	3936 ft. (1200 m)
20 Mbps	3280 ft. (1000 m)
25 Mbps	2624 ft. (800 m)
30 Mbps	2296 ft. (700 m)
40 Mbps	1968 ft. (600 m)
50 Mbps	984 ft. (300 m)

- PoE LED is only on the Hardened IEEE 802.3at PoE PSE Ethernet Extender versions (LBPS301A and LBPS304A).
- DC Terminal Block Power Inputs: There are two pairs of power inputs that you can use to power up this Ethernet Extender. Redundant power supplies function is supported. You only need to have one power input connected to run the Ethernet Extender.
- DC jack: Power Input: 48 VDC.

10/100BASE-TX and Ethernet Extender Connectors

10/100BASE-TX connection

Figure QS-2 shows the pinouts of 10/100BASE-TX RJ-45 port. Table QS-5 describes the functions.

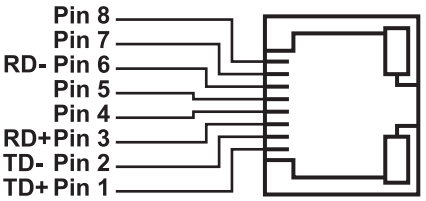

Figure QS-2. RJ-45 port pinout.

Table QS-5. 10/100BASE-TX RJ-45 port pin assignments.

Pin	Regular Ports	Uplink Ports
1	Output Transmit Data +	Input Receive Data +
2	Output Transmit Data -	Input Receive Data -
3	Input Receive Data +	Output Transmit Data +
4	Positive (VCC+)	Positive (VCC+)
5	Positive (VCC+)	Positive (VCC+)
6	Input Receive Data -	Output Transmit Data -
7	Negative (VCC-)	Negative (VCC-)
8	Negative (VCC-)	Negative (VCC-)

- Pin 4, 5 Positive (VCC+) and Pin 7, 8 Negative (VCC-) are only available for Hardened IEEE 802.3at PoE PSE Ethernet Extender version.

Ethernet Extender Connection

The RJ-11 and terminal block port pinouts

Pin 3: Tip, Pin 4: Ring.

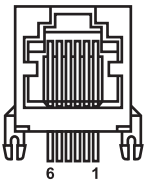

Figure QS-3. Ethernet connector pinout.

Use a twisted-pair telephone line to connect two RJ-11 or terminal block ports between two Hardened Ethernet Extenders.

WARNING: Inappropriate operation might damage the terminal block.

QS.2 Functional Description

- Meets NEMA TS1/TS2 environmental requirements: temperature, shock, and vibration for traffic control equipment.
- Meets EN61000-6-2 & EN61000-6-4 EMC Generic standard Immunity for industrial environment.
- Operates transparent to higher layer protocols such as TCP/IP.

- Ethernet port: Supports IEEE 802.3/802.3u/802.3x. Autonegotiation: 10/100 Mbps, full-/half-duplex; Auto MDI/MDI-X.
- Complies with IEEE 802.3at standard for high power input required device and also compatible with IEEE 802.3af powered devices (Only available for Hardened IEEE 802.3at PoE PSE Ethernet Extender version.)
- Ethernet Extender port (RJ-11 and terminal block): Symmetrical on the VDSL, full-duplex 50-Mbps communications link over existing twisted-pair copper telephone line.
- One DIP switch for configuring Local (Loc) and Remote (Rmt).
- Ten speeds with speed indicator LEDs on front panel of unit, up to 50 Mbps @ about 984 feet (300 meters), down to 1 Mbps @ about 6232 feet (1900 meters).
- 4-port 10/100BASE-TX (2-port IEEE 802.3at PoE PSE) Ethernet Extender: 2.88 A @ 24 VDC, 1.44 A @ 48 VDC. Power consumption: 69.12 W Max.
- 2-port IEEE 802.3at PoE PSE Ethernet Extender: 2.88 A @ 24 VDC, 1.44 A @ 48 VDC. Power consumption: 69.12 W Max.
- 1-port IEEE 802.3at PoE PSE Ethernet Extender: 1.6 A @ 24 VDC, 0.8 A @ 48 VDC. Power consumption: 38.4 W Max.
- 4-port 10/100BASE-TX Ethernet Extender: 0.36 A @ 24 VDC, 0.18A @ 48 VDC. Power consumption: 8.64 W Max.
- Power Supply: Redundant 24-48 VDC terminal block power inputs and 48 VDC. DC jack with 100–240 VAC external power supply.
- Field Wiring Terminal Markings: Use copper conductors only, 140/167° F (60/75° C), wire range 12-24 AWG, torque value 7 lb-in.
- Operating temperature range @ -40 to +167° F (-40 to +75° C). Tested for functional operation @ -40 to +185° F (-40 to +85° C). UL® 508 Industrial Control Equipment certified. Maximum surrounding air temperature @ 167° F (75° C).
- For use in Pollution Degree 2 Environment.
- Supports DIN rail, panel, and rackmounting installation.

QS.3. Assembly, Startup, and Dismantling

- Assembly: Place the Hardened Ethernet Extender on the DIN rail from above using the slot. Push the front of the Hardened Ethernet Extender toward the mounting surface until it audibly snaps into place.
- Startup: Connect the supply voltage to start up the Hardened Ethernet Extender via the terminal block (or DC jack).
- Dismantling: Pull out the lower edge and then remove the Hardened Ethernet Extender from the DIN rail.

QS.4. Wiring Diagram

Field Wiring Terminal Markings: Use copper conductors only. 60/75° C (140/167° F); wire range 12-24 AWG; torque value 7 lb./in.

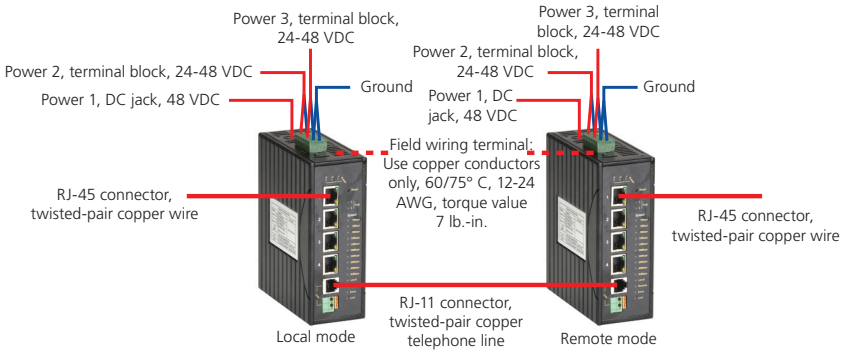

Figure QS-4. Wiring diagram using RJ-11 connector for copper telephone line.

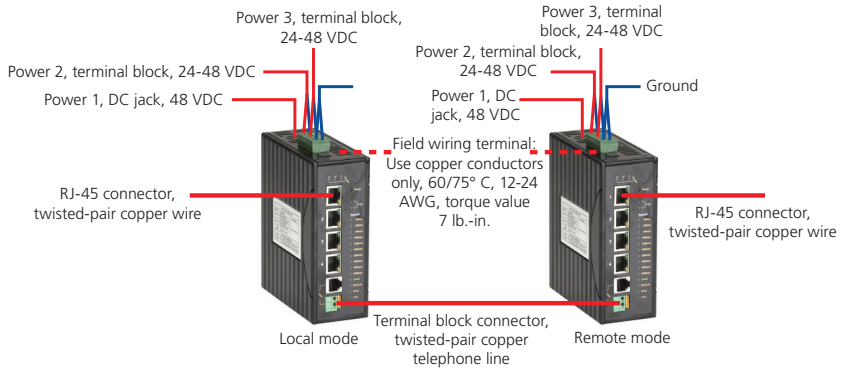

Figure QS-5. Wiring diagram using terminal block connector for copper telephone line.

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